

### **REMARKS**

The present Amendment is in response to the Examiner's Final Office Action mailed October 24, 2005. Claims 1–10, 14, and 17–24 are amended and new claims 25–28 are added. Claims 1–28 are now pending in view of the above amendments.

Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants understanding and discussion of the references, if any, is consistent with the Examiner's understanding.

#### **I. PRIOR ART REJECTIONS**

##### **A. Rejection Under 35 U.S.C. §102(b)**

The Examiner rejects claims 1–3, 5–6, 8, 14, and 19–20 under 35 U.S.C. § 102(b) as being anticipated by *Jewell* (United States Patent No. 5,719,891). Because *Jewell* does not teach or suggest each and every element of the rejected claims, Applicants respectfully traverse this rejection in view of the following remarks.

The *Jewell* patent is entitled "Conductive Element with Lateral Oxidation Barrier." Lateral oxidation is a known process for creating an insulating region to control current flow in a semiconductor device. *See* col. 1, lines 20–21. The process in *Jewell* relates to a method that controls the extent of lateral oxidation by implanting ions into the region that is to be protected against oxidation. The ions are implanted using a diffusion beam. The interdiffusion region acts as a barrier to lateral oxidation. *Jewell* also teaches that most oxidation processes are performed on AlAs or AlGaAs. Col. 1, lines 44–45. In oxidized VCSELs, the aluminum is the component

that is oxidized to form the insulating material (i.e., aluminum oxide). *See* col. 2, lines 25–26; *see also* Application at p. 13, lines 8–13. The oxidation of aluminum is carried out using water vapor at 425 °C. *See* col. 1, lines 25–27.

Claim 1 has been amended to require a “dielectric layer ... comprising a non-aluminum dielectric material....” Support for this limitation can be found in the Application at p. 13, lines 8–13 and p. 13, line 24 – p. 14, line 3. *Jewell* does not anticipate amended claim 1 because *Jewell* does not teach a gain guide that includes a non-aluminum dielectric material. The gain guide in *Jewell* is formed from oxidized aluminum. The oxidized layers in the device of *Jewell*, are materials “primarily comprising Al as the group-II element.” col. 7 lines 5–14. Every single material listed as suitable for use as an oxidized layer includes aluminum. *Id.* *Jewell* does not teach or suggest using any other dielectric material in the gain guide, other than oxidized aluminum.

Claim 14 has been amended to require that the “confinement means” comprises “a dielectric material selected from the group consisting of SiO<sub>2</sub>, TiO<sub>2</sub>, SiN, and combinations thereof”. Support for this amendment can be found in the application at p. 14, line 16. As discussed above, *Jewell* discloses a gain guide made from oxidized aluminum. *Jewell* does not teach “confinement means” comprising SiO<sub>2</sub>, TiO<sub>2</sub>, SiN, or a combination thereof. Because *Jewell* does not teach confinement means that includes SiO<sub>2</sub>, TiO<sub>2</sub>, SiN, or a combination thereof, Applicants respectfully request that the rejection under 35 U.S.C. § 102(b) be withdrawn.

Claim 8 has been amended to remove the limitation of “masking the dielectric gain guide” and now requires that the “mask provides a pattern for forming an aperture in the dielectric material.” This amendment merely clarifies that the aperture is formed in a dielectric material while the gain guide is what results from forming the aperture.

In the Office Action, claim 8 has been rejected over *Jewell*. As stated in the Office Action, it is the Examiner’s position that since “claim 8 recites the same or identical elements/limitations it is inherent to use patents ‘891 [i.e. *Jewell*] to recite the method of making a gain VCSEL guide, product by process.” It appears that the Office Action rejects claim 8 as a product by process claim. However, claim 8 recites “A method for making.” To anticipate a process claim under § 102 (b), the prior art must teach each and every step of the claimed

process. The Office Action appears to reject claim 8 based on the features of the device. Consequently, the rejection is improper. Furthermore, *Jewell* does not anticipate claim 8 at least for the reason that *Jewell* does not disclose the step of “depositing a mask ... wherein the mask provides a pattern for forming an aperture.” Applicants respectfully request that the rejection of claim 8 under 35 U.S.C. § 102(b) be withdrawn. Furthermore, if it is the Examiner’s position that one or more of the elements recited in the claim are inherent in *Jewell*, the Applicant’s respectfully request that the Examiner identify the inherent element(s) and explain why that element(s) is inherent.

Claim 19 has been amended to recite method steps rather than a product by process. *Jewell* does not anticipate amended claim 19 because it does not teach forming a layer of dielectric “using a dielectric deposition process.” In *Jewell*, the gain guide is formed by lateral oxidation. See Abstract. Amended claim 19 is not anticipated by *Jewell* since *Jewell* does not teach a “layer of dielectric” that is formed “using a dielectric deposition process.”

**B. Rejection Under 35 U.S.C. § 103**

The Examiner rejects claims 4, 7, 9–13, 15–18, 21, and 22–24 under 35 U.S.C. § 103(a) as being unpatentable over *Jewell* (United States Patent No. 5,719,891). Applicants traverse the Examiner’s rejection for obviousness on the grounds that there is no teaching, suggestion, or motivation to modify *Jewell* in the manner suggested by the Examiner. The prior art must teach or suggest making a modification to the prior art in order to render a claimed invention obvious. *In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

It is the Examiner’s position that it was within the ordinary skill of a worker in the art to modify the device in *Jewell* to make a gain guide that includes SiO<sub>2</sub>, TiO<sub>2</sub>, or SiN. See Office Action p. 3, ¶ 5. The Examiner’s view is that the selection of these materials is “an obvious design choice.” *Id.*

The suggested modification of *Jewell* is not an obvious design choice because SiO<sub>2</sub>, TiO<sub>2</sub>, SiN would not work in the process described in *Jewell*. *Jewell* teaches forming a gain guide using lateral oxidation. This process requires depositing layers of an aluminum-containing semiconductor material and then oxidizing the aluminum using water vapor and heat. Lateral oxidation cannot be used, or is typically not used to form SiO<sub>2</sub>, TiO<sub>2</sub>, or SiN in a semiconductor

device. Since the modification suggested by the Examiner is inoperable with the invention in *Jewell*, there is no suggestion or motivation to make the proposed modification. *See In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Applicant respectfully requests that the rejection under 35 U.S.C. § 103 (a) be withdrawn.

Claims 24–28 are newly added dependent claims. These claims are supported by previously presented claims 9 and 24.

Since claims 2–7, 9–13, 15–18, and 20–28 depend from either claim 1, 8, 14, or 19, claims 2–7, 9–13, 15–18, and 20–28 are allowable for at least the same reason claims 1, 8, 14, and 19 are allowable.

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 28<sup>th</sup> day of June, 2006.

Respectfully submitted,



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